STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit Number:	MO-0122572
Owner:	MOARK Productions, Inc.
Owner Address:	1100 Blair Avenue; Neosho, MO 64850
Continuing Authority:	Same as above
Continuing Authority Address:	Same as above
Facility Name:	MOARK Anderson Farm
Facility Address:	2950 F Hwy, Anderson, MO 64831
Legal Description:	NW¼, NW¼, Sec.3, T22N, R33W, McDonald County
Latitude/Longitude:	See Operation Description
Receiving Stream:	Tributary to North Fork Patterson Creek
First Classified Stream and ID:	Patterson Creek (P)(03268)
USGS Basin & Sub-watershed No.:	11070208-070004

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

Water quality standards do not have to be exceeded to determine the unauthorized discharge of processed waste as defined in special condition 2(b). Operation of this site shall not cause a violation of water quality standards. Land application fields include all company owned land where land application occurs and all non-company owned land where spreading agreements allow land application. These provisions apply to all the company's regulated activities.

OPERATION DESCRIPTION

Outfalls #001 - #013 – Concentrated Animal Feeding Operation - SIC #0252
No Discharge of Process Waste, Class IA
Eight concrete storage pits/land application/egg wash water/domestic sewage/storm water runoff.
Design population equivalent is 91,949.
Design number of animals is 875,700 layer hens. (29,190 animal units)
Design flow is 8,723,500 gallons/year. (0.0239 MGD)
Domestic Waste Design Flow is 200,750 gallons/year. Population Equivalent is 10.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

November 1, 2005
Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

October 31, 2010
Expiration Date

Edward Galbraith, Director of Staff, Clean Water Commission

FACILITY DESCRIPTION (continued)

Composted poultry litter qualifies for a permit exemption in accordance with Missouri Clean Water Law and Regulations under 10 CSR 20-6.015(3)(B)8 as an organic fertilizer product for agricultural production. Compost that meets Class-A pathogen criteria would qualify for unrestricted public use either as an organic fertilizer, compost product, or potting soil in either bag or bulk form.

Total Number of Approved Acres Available for Land Application:

Percent Slope	Land Owned by Permittee	Non-owned Land with Spreading Agreement	Acres Total
0-10%	360	7196	7556
10-20%			
TOTAL	360	7196	7556

Outfall #001 - System Type: Ten (10) poultry buildings/eight (8) concrete pits: Manure storage locations and quantities – Buildings #1,2,3,4,8 and 9 have 21,413 cu. ft. each; building #5 has 19,023 cu. ft.; building #6 has 23,474 cu. ft.; building #7 has 19,835 cu. ft.; pit #1 has 8,526 cu. ft.; pit #2 has 8,490 cu. ft.; pit #3 has 8,293 cu. ft.; pit #4 has 19,820 cu. ft.; pit 35 has 16,597 cu. ft.; pit #6 has 8,739 cu. ft.; pit #7 has 8,625 cu. ft.; pit #8 has 11,118 cu. ft.
Pit #1 serves building #1
Pit #2 serves building #2
Pit #3 serves building #3
Pit #4 serves buildings #4 and #5
Pit #5 serves buildings #6 and #7
Pit #6 serves building #8
Pit #7 serves building #9
Pit #8 serves building #10
Legal Description: NW ¼, NW ¼, Sec 3, T22N, R33W, McDonald County
Lat/Long: +3640202/-09429176
First Classified Stream and ID: Patterson Cr. (P) 03268
USGS Basin & sub-watershed No: 1107028-070004
Design Number of Animals: 875,700 Laying Hens (29,190 Animal Units)
Design Population Equivalent: 91,949
Design Waste Volume: 3,121.6 cu. ft./day or 23,350 gallons/day
Design Storage Pit: Pit #1 and building 29,939 cu. ft. or 127 days; Pit #2 and building 29,903 cu. ft. or 127 days; Pit #3 and building 29,706 cu. ft. or 126 days; Pit #4 and buildings 60,256 cu. ft. or 127 days; Pit #5 and buildings 59,906 cu. ft. or 88 days; Pit #6 and building 30,152 cu. ft. or 128 days; Pit #7 and building 30,038 cu. ft. or 127 days; Pit #8 and building 34,592 cu. ft. or 101 days.
Upper Operating Level: one foot below overflow level.
Lower Operating Level: Pit #1-8.25 feet; Pit #2-8.58 feet; Pit #3-8.25 feet; Pit #4-8.66 feet; Pit #5-7.66 feet; Pit #6-8.66 feet; Pit #7-8.58 feet; Pit #8-8.75 feet below overflow level.
Land Application: Rates are based on the plant available nitrogen approach.

Outfall #002 - Domestic Wastewater: SIC Code #4952
No-discharge domestic wastewater treatment systems serving employee restrooms, cafeteria, and showers consisting of 2 separate septic tanks and subsurface absorption fields serving a total of 37 employees.
Design population equivalent is 10.
Design Flow is 200,750 gallons/year.
Legal Description: NW ¼, NW ¼, Sec 3, T22N, R33W, McDonald County.

FACILITY DESCRIPTION (continued)

Outfall # 003 - Production Site
Legal Description: NW ¼, NW ¼, Sec 3, T22N, R33W, McDonald County,
Storm water runoff from east side of production site at detention pond (location #1 in O&M manual)

Outfall # 004 - Production Site
Legal Description: NW ¼, NW ¼, Sec 3, T22N, R33W, McDonald County,
Storm water runoff from west side of production site (location #5 in O&M manual)
Legal Description: NE ¼, NE ¼, NE ¼, Sec 7, T21N, R32W, McDonald County
Tributary to Elk River at property line

Outfall # 005 - Stream Monitoring/Downstream
Legal Description: SE ¼, SE ¼, NE ¼, Sec 21, T23N, R33W, McDonald County
Lat/Long: +364242.6/-0942925.9
Beeman Hollow at property line (U)

Outfall # 006 - Production Site
Legal Description: NW ¼, NW ¼, Sec 3, T22N, R33W, McDonald County
Lat/Long: +3640234/-09429190
Storm Water runoff from north side of production site

Outfall # 007 - Stream Monitoring/Upstream
Legal Description: SE ¼, NE ¼, Sec 27, T23N, R33W, McDonald County
Lat/Long: +364152.6/-942828.9
South Fork Beeman Hollow

Outfall # 008 - Stream Monitoring/Upstream
Legal Description: S 1/2, SE ¼, Sec 14, T23N, R34W, McDonald County
Lat/Long: +364321.6/-943358.2
Buffalo Creek

Outfall # 009 - Stream Monitoring/Downstream
Legal Description: S 1/2, NE ¼, Sec 7, T23N, R33W, McDonald County
Lat/Long: +364439.1/-943145.9
Buffalo Creek

Outfall # 010 - Stream Monitoring/Downstream
Legal Description: SW 1/4, SW ¼, Sec 5, T22N, R33W, McDonald County
Lat/Long: +363948.5/-943134.4
Tributary to Patterson Creek

Outfall # 011 - Stream Monitoring/Downstream
Legal Description: NW 1/4, NW ¼, Sec 9, T22N, R33W, McDonald County
Lat/Long: +363936.3/-943025.4
North Fork Patterson Creek

Outfall # 012 - Stream Monitoring/Upstream
Legal Description: SE 1/4, SE ¼, Sec 6, T22N, R33W, McDonald County
Lat/Long: +363945.9/-943153.6
Patterson Creek

Outfall # 013 - Stream Monitoring/Downstream
Legal Description: N 1/2, SE ¼, Sec 23, T23N, R34W, McDonald County
Lat/Long: +364251.9/-943400.1

Tributary to Buffalo Creek

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS			PAGE NUMBER 4 of 20 PERMIT NUMBER MO-0122572	
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls # 001 - Unauthorized Discharge Monitoring				
Flow	MGD	Comply with Water Quality Standards. See Special Condition Numbers 1,2,3,8.9 & 10	once/day during discharge	24 hr. estimate
Dissolved Oxygen	mg/L		once/day during discharge	grab
Ammonia Nitrogen as N	mg/L		once/day during discharge	grab
BOD	mg/L		once/day during discharge	grab
pH – Units	SU		once/day during discharge	grab
Temperature	^{0}C		once/day during discharge	grab
Chloride	mg/L		once/day during discharge	grab
Outfalls # 001 - Nutrient Monitoring For Land Application				
Total Kjeldahl Nitrogen as N	mg/L	See Special Condition Numbers 4 & 10		composite
Ammonia Nitrogen as N	mg/L	Sample materials prior to land application. Analysis will be valid for a 3-month period.		composite
Total Phosphorus as P	mg/L			composite
Nitrate/Nitrite as N	mg/L		1/year	composite
Percent Moisture	%			composite
Outfalls # 001 - Land Application Operational Monitoring on approved acres				
Lagoon or Storage Structure Freeboard	feet	See Special Condition Numbers 5, 10, and 15 through 22.	once/month	measured
Amount Land Applied	gallons or feet^3		daily	total
Application Area	acres		daily	total
Application Rate	inches or feet^3/acre		daily	total
Rainfall	inches		daily	total

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2006. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS			
		DISCHARGE MAXIMUM	REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls # 003,004,006 - Production Sites - Storm Water Runoff Limits from Production Sites					
Flow	MGD		No discharge of process waste. See Special Condition Numbers 1,2,6 & 10	4/Year	24 hr. estimate
pH – Units	SU			4/Year	grab
Ammonia Nitrogen as N	mg/L	2.5		4/Year	grab
Nitrate/nitrite as N	mg/L			4/Year	grab
Dissolved Phosphorus as P	mg/L			4/Year	grab
Total Suspended Solids	mg/L			4/year	grab
Temperature	^{o}C			4/Year	grab

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OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls Upstream # 007,008,012 Outfalls Downstream # 005,009,010,011,013 Stream Monitoring				
Flow	MGD	Samples shall be collected during the same week on a pre-determined sampling date on a monthly basis. Samples shall be only collected from flowing water. Samples from riffles are preferred. Do not collect a sample from pools that do not have water flowing into or out of the pool. See Special Condition Numbers 1,2,8 &10.	1/month	24 hr. estimate
pH – Units	SU		1/month	grab
Ammonia Nitrogen as N	mg/L		1/month	grab
Nitrate + Nitrite as N	mg/L		1/month	grab
Total Phosphorus as P	mg/L		1/month	grab
Temperature	°C		1/month	grab
Total Suspended Solids	mg/L		1/month	grab
Dissolved Oxygen	mg/L		April through November between 1 hour before to 3 hours after sunrise	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2006. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
All Application Fields - Storm Water Monitoring within 24 hours after land application on approved acres				
Ammonia Nitrogen as N	mg/L	See requirements below. See Special Condition Numbers 1, 2, 8 and 10.	See sample collection frequency requirements below in paragraph d & e.	grab
Nitrate + Nitrite as N	mg/L			grab
Chloride	mg/L			grab
Total Phosphorus as P	mg/L			grab
Temperature	°C			grab
pH – Units	SU			grab
Date of Runoff				
Field Number				
Crop				
Application Equipment				
Application Rate				

a. This is a monitoring only requirement.
b. This monitoring procedure will be used to evaluate the rainfall runoff from fields that have received rainfall within 24 hours after land application of process waste.
c. Samples shall be collected from one location that has rainfall runoff at the field boundary. If no flow at field boundary, report as no-discharge from field.
d. Samples shall be collected within the first sixty (60) minutes after the start of the runoff, or as soon as possible. Sampling is only required to be conducted during daylight hours. Permittee will address specific sampling procedures in Operations and Maintenance Manual.
e. One sample shall be collected from each field (maximum of two fields per rain fall event) that has rainfall runoff within 24 hours of land application for the first six (6) rainfall events during each of the following time periods: (March, April, May) – (June, July, August) – (September, October, November).
f. One control sample shall be collected per quarter from a location that has not received rainfall within 24 hours after land application of process waste. The control sample may be collected (1) during the same rainfall event from a field with the same crop or (2) from the location where the 24-hour sample was collected but during a subsequent rainfall event that has not occurred within 24 hours after land application of process waste.

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2006. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Land Application Fields - Soil Monitoring on approved acres				
Nitrate nitrogen as N	mg/kg	See Special Condition Numbers 7,8 & 10.	1/year In Spring Prior to Planting Season	Composite
Soil pH	Std Unit		1/3 Years	Composite
Per Cent Organic Matter	%		1/3 Years	Composite
Cation Exchange Capacity	Std Unit		1/3 Years	Composite
Available Phosphorus as P (Bray P-1 test method)	mg/kg		1/3 Years	Composite

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 28, 2007. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

C. SPECIAL CONDITIONS

1. Water Quality Standards
   a. Operation of this production site and approved acres shall not cause a violation of water quality standards rule under 10 CSR 20-7.031.
   b. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation or putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such material is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (continued)

2. No-Discharge Requirement
   a. The permittee shall sell, give away or otherwise move process waste as needed to keep the storage structures within design operating levels. The storage structures shall be maintained as near to the lower operating level as practicable. Process waste discharge is not allowed by pumping, siphoning or any other method.
   b. Definition: Process Waste
      Process waste as defined in 10 CSR 20-6.300 includes manure, wastewater and any precipitation which comes into contact with any manure, litter or bedding or any other raw material or intermediate or final material or product used in the production of animals or direct products. It includes spillage or overflow from animal watering systems; washing, cleaning or flushing of pens, barns, manure pits or other associated animal operations; washing or spray cooling of animals; dust control; storm water runoff from animal confinement areas and loading and unloading areas; storm water runoff from deposits of airborne dust from building ventilation systems or spillage of feed or manure; discharges from land application fields that occur during land application; and storm water runoff from land application fields if wastes are applied during frozen, snow covered or saturated soil conditions or if application rates exceed the maximum nitrogen utilization of the vegetation grown.
   c. Definition: Processed Litter
      Any raw manure whose biological, chemical, or physical state has been altered by bulking additives such as wood chips, saw dust, rice hulls or similar materials or altered by heat, pressure, composting or similar processes. The end product will be a product that will stack on its own with an angle of repose.

3. Monitoring of Unauthorized Discharge (Outfall #001)
   a. Any unauthorized process waste discharge that occurs due to storage structure overflow shall be monitored once/day for flow, ammonia nitrogen as N, dissolved oxygen, BOD, pH, temperature, and chloride.
   b. Samples shall be collected of the discharge at the downgradient property boundary. Samples shall also be collected from any defined drainage that is above and below the receiving waters at the downgradient property boundary. If the receiving drainage is dry above the discharge point, report as no stream flow above the discharge point.
   c. Records shall be maintained for time, date, location, and duration of the discharge and an estimate of the discharge volume.
   d. Notify the department as soon as possible and no later than within 24 hours of any discharge that occurs and submit monitoring results within 30 days.

4. Nutrient Monitoring for Land Application (Outfall #001)
   a. When raw manure is applied on approved acres it shall be sampled and tested. Samples shall be collected once per quarter that land application occurs on approved acres. Each sample shall be a composite sample with a minimum of 7 grab samples to adequately represent consistent analysis of the various types of manure. Samples shall be tested for Total Kjeldahl Nitrogen (TKN) as N, ammonia nitrogen as N, total phosphorus as P, and per cent moisture content. Samples shall also be tested at least once/year for nitrate/nitrite nitrogen.
   b. Materials (calcium deposits) from the concrete pits shall be sampled and tested separately. At least one composite sample shall be collected prior to land application and every three months thereafter while land application occurs. Each composite sample shall consist of at least 20 grab samples. Materials shall be tested for total Kjeldahl nitrogen as N, ammonia nitrogen as N, total phosphorus as P, and per cent moisture content.

C. SPECIAL CONDITIONS (continued)

5. Land Application Operational Monitoring on approved acres (Outfall #001)
   a. The inches of precipitation received at the production site shall be recorded daily and shall be reported quarterly for daily amounts, monthly totals, and cumulative total.
   b. Daily records shall be kept on file by each field for land application locations, volumes, acres, inches/hour, inches/acre, or $feet^3$/acre, and which pit was being emptied. These shall be summarized in the quarterly and annual reports.
   c. Monthly measurements shall be made of the process waste level in each pit and shall be recorded as feet below the top of the pit.
      These shall be summarized in the quarterly and annual reports.
   d. Nitrogen application rates, crop yields, crop nitrogen requirements, and other operational monitoring shall be recorded for each field and reported in the annual report.

6. Storm Water Runoff Monitoring from Production Sites
   a. Samples required in this paragraph shall be collected at the storm water monitoring locations listed in Section A of this permit.
   b. Storm water runoff shall be monitored once per quarter (4 times per year) for ammonia nitrogen as N, nitrate/nitrite nitrogen as N, dissolved phosphorus as P, total suspended solids, pH, and temperature.
   c. Samples shall be collected during storm water runoff events that occur after rainfalls of at least 0.5 inch within a 24-hour period. Collect the sample as soon as practicable after the beginning of storm water runoff.
   d. If there are no runoff events during a monitoring period, report as no discharge of storm water.
   e. A storm water runoff event is defined as a 24-hour period after the start of runoff. Runoff occurring after that will be considered as a separate runoff event.
   f. Storm water runoff less than 2.5 mg/L ammonia shall be considered uncontaminated storm water and may be discharged through this outfall. Storm water runoff exceeding 2.5 mg/L ammonia is considered process waste and must comply with no-discharge requirements.

7. Soil Monitoring on approved acres
   a. Composite soil samples shall be collected for all approved sites where land application will occur within the next 12 months.
      (1) Nitrate nitrogen as N shall be tested once per year in spring prior to planting season. Soil samples may be collected for the top 0-12 or 0-24 inches or more.
      (2) Soil pH, percent organic matter, cation exchange capacity, and available phosphorus as P (Bray P-1 test method) shall be sampled prior to land application and once every three (3) years thereafter, unless no additional land application has occurred at the site. Samples shall be collected for the surface 0-6 inches.
   b. Soil sampling shall be in accordance with University of Missouri (MU) publication G9110, "Sampling Your Soil for Testing" or other methods approved by the department.
   c. Soil testing methods shall be in accordance with North Dakota Agricultural Experiment Bulletin 499-Revised, "Recommended Chemical Soil Test Procedures for the North Central Region" or other test methods approved by the department.
   d. The annual report shall include a summary of the soil test results for each field.

8. Sample Collection, Preservation and Testing Methods
   Preservation and analytical procedures shall be in accordance with the most current version of Standard Methods for the Examination of Waters and Wastewaters or other approved methods listed in 10 CSR 20-7.015(9)(A).

9. Required Notification of Releases
   a. Any process waste discharge into waters of the state shall be reported to the Department as soon as possible and no later than 24 hours after the start of the discharge.
   b. Spills or leaks that are contained on the property shall also be reported to the Department within 24 hours, if the flow exceeds 1,000 gallons per day or 130 cubic feet per incident. This includes leaks from sewer lines, basins, pits, solids spreaders other land application equipment or irrigation systems.

C. SPECIAL CONDITIONS (continued)

10. Annual Report
    a. An annual report is required in addition to the quarterly reporting under Section A of this permit. The annual report shall be submitted by January 28 of each year for the previous growing season from October 1 through September 30 or an alternate 12 month period approved by the Department and listed in the Operation and Maintenance Manual. This report shall be submitted using a format approved by the Department and shall include a summary of the monitoring and record keeping required by the Special Conditions and Standard Conditions of this permit.
    b. The annual report must include the receivers name, date, and amount of manure or compost sold or given away when the amount is less than 2 cubic yards. The record keeping requirement in Special Condition 25 does not apply to amounts less than 2 cubic yards that are sold or given away.
    c. The annual report must also include the receivers name, date, amount, acres applied on, location, crop, and expected yield of any manure or compost sold or given away that will be land applied in the Spring River Watershed north of the Spring River Entity ID 03160.

11. Design Parameters
    The design parameters listed below are operational guidelines to predict nutrient generation. Any proposed increases must be reported in accordance with Standard Conditions Part I, Section B, Paragraph 1., and may require a permit modification prior to the proposed change.
    a. Design Population Equivalent: The Design Population Equivalent is the human equivalent based on the annual average daily pounds of animals at the design capacity listed in the permit application. The average daily pounds of animals multiplied by a standard conversion factor equals the Design (human) Population Equivalent. The conversion factors are: 0.015 swine, 0.014 beef; 0.020 dairy; 0.030 laying hen; 0.040 turkey; and 0.05 poultry broiler.
    b. Design Flow: The design flow is based on the maximum annual flows including storm water flows during the one-in-ten year return frequency for annual or 365 day rainfall minus evaporation. The design flow is based on the time period when the flows are generated at the production site and not when flows are land applied. Portions of the design flow may be stored and carried over into the following year for land application, as necessary. Permittee may exceed the design flow when precipitation in any 365-day period exceeds the one-in-ten year annual precipitation amount.
    c. Animal Units: Animal Units are based on the maximum number and weight classification of animals in the permit application.
    d. Concrete Pit Levels: As an operational guideline, the concrete pit levels should be maintained between the lower and upper operating levels during normal operations. If the upper operating level is exceeded, the operation shall take all reasonable measures to lower the pit level as soon as reasonably practicable. Within seven (7) days of the date that a pit's level exceeds the upper operating level, the permittee shall mail a report to the department that identifies the pit(s), the pit level in inches below the overflow level and actions taken to reduce the pit levels.
    e. Reporting Requirements: The actual operation numbers compared to the permitted design parameters shall be summarized in the annual report.

12. Construction Permits
    All process waste systems shall be constructed in accordance with a construction permit except where exempted by state regulations under 10 CSR 20-6.300.

C. SPECIAL CONDITIONS (continued)

13. HB1207
Permittee shall maintain compliance with all applicable provisions of state law under 640.700 to 640.755 RSMo, Supp.1996 (HB1207).

14. Reopener Clause
    a. This permit may be reopened and modified or alternatively revoked and reissued, to incorporate new or modified limitations or other conditions pertaining to phosphorus application rates to soils, or other special conditions as may be necessary to protect waters of the state.
    b. Nutrient Management Plan.
    The permit may be modified or reopened to require submittal of a Nutrient Management Plan in accordance with USEPA and USDA guidelines and regulations or where determined appropriate by the department to meet water quality standards for nutrients.

15. Land Application Site Locations
    a. The permittee shall land apply process waste, manure or processed litter only to approved acres located within the overall property boundaries and descriptions listed in the permit application and associated operation plans. Permittee requests for additional sites including non-owned property must follow permit modification procedures prior to land application. A geologic evaluation shall be conducted on the additional sites prior to public notice.
    b. Permittee may move manure or processed litter to areas north of the Spring River Entity ID 03160 in Missouri providing conditions in Special Conditions 24 and 25 are followed. Missouri does not have jurisdiction for land application activities in other states. Land application activities in other states may be subject to the jurisdiction of the U.S. Environmental Protection Agency and the respective state environmental agency. Permittee shall keep records of all process waste, manure or processed litter that is transported into other states and shall report volumes and dates with the annual report.
    c. Raw manure shall not be land applied in the Elk River Basin Watershed, HUC number 11070208. Only composted manure may be land applied in the Elk River Basin Watershed.

16. Separation Distances for Land Application Sites on approved acres
Separation distances (buffer zones) shall be maintained between the land application site and other features as follows:
    a. Surface Application.
        (1) 300 feet from any losing stream, open sinkholes, water supply wells, or water supply reservoirs;
        (2) 100 feet from classified gaining streams for Class P and Class C streams listed in 10 CSR 20-7.031); unclassified gaining streams with water, and
        (3) 50 feet from unclassified gaining streams without water, public roads, or property boundaries.
    b. Subsurface Injection.
        (1) 300 feet from any losing stream, open sinkholes, water supply wells, or water supply reservoirs;
        (2) 50 feet from classified gaining streams (Class P and C streams listed in 10 CSR 20-7.031); and
        (3) 25 feet from unclassified gaining streams, public roads, or property boundaries
    c. Implementation procedures for these limitations shall be detailed in the Operation and Maintenance Manual.

C. SPECIAL CONDITIONS (continued)

17. Land Application Limitations on approved acres
    a. Process waste shall only be applied on approved acres south of the Spring River Entity ID 03160 in Missouri when land application sites are not available north of the Spring River.
    b. Process wastes should be land applied as close as practicable to when plants will utilize nutrients. Fall application for the spring crop season may be used where appropriate, but should not be the primary application period. Process wastes should be utilized as a nutrient resource.
    c. Process wastes shall not be land applied during frozen, snow covered or saturated soil conditions.
    d. Avoid application or reduce application rates and modify application practices when there is a local, applicable weather forecast or observation by permittee of an imminent or impending storm event. Land application shall cease as soon as practicable upon occurrence of precipitation.
    e. Land application equipment shall be operated in such a manner that wastes do not reach an adjoining property line and all applicable buffer distances are maintained.
    f. Implementation procedures for these limitations shall be detailed in the Operation and Maintenance Manual.

18. Land Application Equipment for approved acres
    a. Permittee shall own or have signed contracts with a commercial applicator to have adequate land application equipment readily available to land apply process waste on approved acres in emergency situations to maintain the storage structures below upper operating level.
    b. Implementation procedures for these limitations shall be detailed in the Operation and Maintenance Manual.

19. Nutrient Management on approved acres
    a. Nitrogen. The permittee shall not exceed the plant available nitrogen management approach as listed in this permit.
    b. Phosphorus. Application rates shall not increase soil P levels above 120 pounds per acre soil test P using Bray P-1 test method. When State NRCS standards and guidelines become available, the permit will be revised by replacing the 120 pound limitation with any method under development by the Missouri NRCS under the USDA's, NRCS National Policy, General Manual, Title 190, Part 402.06.
    c. The actual application rates for a given year or growing season must be adjusted based on the approved management approach and the actual wastewater and soil testing results and crop requirement. If crop yields are less than that predicted, the application rates must be reduced or the yields increased through appropriate changes in management practice.

20. Plant Available Nitrogen Procedure for approved acres
    a. The Plant Available Nitrogen (PAN) method predicts the typical amount of nitrogen that is expected to be available to plants based on the median or average values from the reference publications listed herein. Actual nitrogen available to plants during a growing season may be more or less than the predicted values due to climatic variations. Supplemental nitrogen applications during the growing season may be added to correct plant deficiencies. Process waste and fertilizer nitrogen applications shall be based upon crop nitrogen requirements based on realistic crop yield goals. The process waste application rate shall be calculated as follows:

PAN = CNR - SRN – CFN

WHERE: **CFN** = Commercial Fertilizer Nitrogen applied in pounds N/acre.
CNR = Crop Nitrogen Requirement in pounds N/acre
PAN = Plant Available Nitrogen in manure solids and sludges expressed as annual pounds N/acre.
SRN = Soil Residual Nitrogen in pounds N/acre.

    b. Plant Available Nitrogen (PAN) is calculated as follows:

PAN = [Ammonia Nitrogen] x [Availability Factor]
+ [Organic Nitrogen] x [Availability Factor]
+ [Nitrate Nitrogen] x [Availability Factor]

Note: For anaerobic treated wastewater and sludges, the nitrate nitrogen amounts will be negligible and can be ignored.

C. SPECIAL CONDITIONS (continued)

20. Plant Available Nitrogen Procedure for approved acres (continued)

c. Plant Available Nitrogen (PAN) Availability factors for manure solids and sludges are as follows:

(1) Average availability factors for all fields:

Type of Nitrogen	**Surface Application**	**Immediate Incorporation or Subsurface Injection**
Organic	0.25 - 0.75*	0.25 - 0.75*
Ammonia	0.6**	0.9**
Nitrate	0.9**	0.9**

* Organic Nitrogen = [Total Kjeldahl Nitrogen as N] - [Ammonia as N].
Availability Factors based on time after application and waste type are:

Type of Manure by Animal Type and Waste Storage Method	Availability Factor by Time Period Year 1	Year 2	Year 3	Cumulative Year 3+
Anaerobic Lagoons (all animals/poultry)	0.35	0.18	0.09	0.62
Liquid storage basins (except poultry)	0.35	0.18	0.09	0.62
Poultry - storage basins and dry litter	0.60	0.10	0.05	0.75
Manure solids – beef, dairy, swine				
without bedding	0.35	0.18	0.09	0.62
with bedding	0.25	0.13	0.07	0.45

NOTES: Year 1 is the current year of manure application; year 2 is the previous year of manure application; and year 3 is manure application two years ago. Nitrogen availability for years 1, 2 and 3 must be added when manure is applied in consecutive years. The cumulative factor is used when manure is applied at about the same rate for 3 consecutive years or longer.

** Inorganic nitrogen availability (nitrate + ammonia) based on the typical soil and climate conditions when considering additions due to precipitation, dry deposition, and foliar absorption versus losses due to volatilization and denitrification (10% denitrification loss is included). The permittee may choose to use this average value for all fields or may adjust the N availability based on site specific soil conditions using the tables below under paragraph 24.c.2.

(2) Field Specific Availability Factors for Inorganic Nitrogen.

For ammonia and nitrate nitrogen factors, the permittee may choose to use the average value for all fields under paragraph C.1. above, or may use the alternate factor on a field specific basis using the tables below. The approved factors for each field will be included in the O&M Manual.

C. SPECIAL CONDITIONS (continued)

20. Plant Available Nitrogen Procedure for approved acres (continued)

Table A. Alternate Field Specific Availability Factor for Surface Application

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N (manure., precipitation) available					
< 2	71	66	62	56	45
2-5	66	60	56	49	30
> 5	63	56	49	38	19
Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook (AWMFH), April 1992, Tables 11-6 and 11-8.					

Table B. Alternate Field Specific Availability Factor for Sub-Surface Injection or Immediate Incorporation.

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N (manure., precipitation) available					
< 2	89	84	78	70	57
2-5	84	76	70	62	38
> 5	80	70	62	48	24
Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook (AWMFH), April 1992, Tables 11-6 and 11-8.					

d. Soil Residual Nitrogen (SRN).

(1) For Annual Crops, the nitrogen availability from soil organic matter must be included based on soil CEC and crop season as follows:

SRN in pound N/acre* = [percent organic mater] x Soil Availability Factor

Soil Availability Factor
by Soil CEC Ranges and Organic Matter

Growing Season	**Organic Matter**	**CEC 10**	**CEC 10-18**	**CEC >18**
Summer	1%	40*	20	10
Winter	1%	20*	10	5

* **Note:** If CEC is less than 10 and organic matter is 1.5% or greater, the total SRN is constant at 60 pounds nitrogen for summer and 30 pounds for winter.

C. SPECIAL CONDITIONS (continued)

20. Plant Available Nitrogen Procedure for approved acres (continued)

(2) For Perennial Crops the SRN is considered zero (0) for purposes of these calculations because the SRN has already been considered in the crop fertilization recommendations in the referenced publications.

e. Conversion Factors for laboratory testing results:
[mg/L or mg/kg or ppm] x [conversion factor] = [pounds per Unit Volume]

Unit Volume	Conversion Factors
lbs/acre inch	0.226
lbs/1,000 gallons	0.0083
lbs/100 cubic feet	0.0062
lbs/ton (wet wt)	0.002

f. Crop nitrogen requirements shall be based on University of Missouri publication, Soil Test Interpretations and Recommendations Handbook, as revised or one of the other reference publications listed in this permit. Alternate reference publications may be used only upon prior approval by the department and shall be listed in the approved Operation and Maintenance Manual.

g. If a crop is not harvested or grazed, the PAN rate shall not exceed 40 lbs/acre/year and grass vegetation must be maintained on the site.

h. PAN calculations for land used for grazing cattle shall include both manure additions by cattle and crop nitrogen consumed by the cattle based on actual cow days per acre/year. This permit does not authorize grazing of cattle where prohibited by state statute under Chapter 350 RSMo.

i. PAN calculations, application amounts, crop yields and crop removal rates shall be listed in the annual report.

j. Alternate nitrogen availability factors may be considered based upon site-specific conditions for each field and submittal of scientific justification. Alternate factors will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

k. Supplemental nitrogen may be added to row crops when determined necessary for proper plant growth based on testing of plant vegetation or soil nitrate testing during the growing season. Procedures will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

l. Primary reference publications used herein are:

(1) Livestock Waste Facilities Handbook, Midwest Plan Service, MWPS-18, April 1993.

(2) National Engineering Handbook, Part 651, Agricultural Waste Management Field Book, USDA, Natural Resources Conservation Service (NRCS), April 1992 and current supplements.

(3) Managing Nitrogen for Groundwater Quality and Farm Profitability, Soil Science Society of America, Inc., 1991.

(4) Soil Test Interpretations and Recommendations Handbook, University of Missouri, Department of Agronomy, December 1992.

(5) Plant Available Nitrogen Procedure, Missouri Department of Natural Resources, Water Pollution Control Program, April 1998.

21. Operation and Maintenance Manual

The permittee shall develop, maintain and implement an Operation and Maintenance (O&M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems. Copies of the O&M Manual and subsequent revisions shall be submitted to the department's Water Pollution Control Program and Regional Office for review and approval. The O&M Manual shall include, but not limited to, the following:

C. SPECIAL CONDITIONS (continued)

21. Operation and Maintenance Manual (continued)

a. Detailed topographic maps of approved acres showing all land application fields including the identification numbers for each field. The maps shall also indicate separation distances from streams, ponds, wells, and property lines and shall indicate areas exceeding 10 percent slopes and other areas that are not suitable for land application. The maps shall also include the location of all buildings, pits underground terrace outlets, dead animal storage or disposal areas, domestic wastewater treatment systems and other waste handling units.
b. Start up procedures, field supervision during operation, and shutdown procedures of land application equipment on approved acres.
c. Procedures for providing the separation distances required by this permit and as specified in 10 CSR 20-8.020 (15) (B).
d. Sample collection, preservation, and testing procedures.
e. Procedures for determining Plant Available Nitrogen (PAN) loading rates.
f. Record keeping forms for approved acres tracking each field, and storage structure. This shall include testing results, crops, yields, and application rates for each field. Records for each field shall include dates and amounts applied.
g. A procedure for promptly reporting spills or discharges to the permittee plant manager and to DNR.
h. A program to keep debris out of the concrete pits.
i. A program for routine, unannounced inspections of approved land application sites and records to ensure that all directives for land application from the permittee's central office are being followed. Records of the inspections shall be maintained by the permittee and made available to the department upon request.
j. A procedure to assure that all appropriate employees are properly trained in operation of the waste systems and are familiar with the O&M Manual.
k. Procedure for adjusting application periods and rates based on soil infiltration capacity, soil moisture content, and percent of soil field (saturation) capacity.
l. List of number, size, and capacity of waste removal, hauling and land application equipment.
m. Number of suitable days each year when land application will occur based on historical one in ten year wettest precipitation and capacity of spreading equipment and personnel available.
n. Procedure to avoid application if there is a weather forecast for significant precipitation within 24 hours.

22. Underground Tile Outlets at Approved Land Application Sites
a. Any underground tile outlets from field terraces or subsurface field drainage tiles shall be shown on the site maps for all land application sites.
b. To prevent potential discharge of process waste during land application on fields with underground tile outlets for terraced fields, the permittee shall either cap the inlets at the fields during land application, provide a 150 feet grass buffer area between the inlets and land application area, or install secondary containment structures below the tile outlets.
c. The Operation and Maintenance Manual shall include specific operating details for these fields to prevent discharge of process waste during land application or leaching of nitrogen through the soils and into the tile drainage system.

23. Bird Mortalities
Disposal of bird mortalities shall be conducted in compliance with Chapter 269 RSMo. There shall be no discharge from the dead bird holding areas to the ground surface.

C. SPECIAL CONDITIONS (continued)

24. Movement of Manure from Production Site
    a. Permittee shall strive to move 90% of manure or processed litter generated at the production site to areas on the north side of the Spring River Entity ID 03160 in Missouri.
    b. Process waste shall only be applied on approved acres south of the Spring River Entity ID 03160 in Missouri when land application sites are not available north of the Spring River.
    c. The following Best Management Practices shall be used when stockpiling manure or processed litter on the north side of the Spring River Entity ID 03160 in Missouri. Manure or processed litter stockpiled in other states may be under the jurisdiction of the U.S. Environmental Protection Agency or the respective state's environmental agency.

Best Management Practices for Temporary Stockpiling of Dry Manure or Processed Litter

February 14, 2003

SECTION A- APPLICABILITY

1. These Best Management Practices (BMPs) pertain to temporary stockpiles of dry manure or litter for periods longer than two weeks when crops are growing that prevent access to safely land apply.
2. These BMPs are for growers and farmers that are not concentrated animal feeding operations (CAFO) and are not required to get a state operating permit.
3. These BMPs are based on Clean Water Commission regulations, on design guides through the University of Missouri Extension Service, The Natural Resources Conservation Service (NRCS) standards, the BMP for concentrated animal feeding operations, and on the general permit for CAFOs. Exceptions to BMPs may be approved on a case-by-case basis by the department.

SECTION B- DEFINITIONS

Definitions as set forth in the Missouri Clean Water Law and 10 CSR 20-6.300 shall apply to those terms used herein. Other applicable definitions are as follows:

1. Agricultural Rates shall mean not exceeding the agronomic rates for fertilizer needs of the plant to be grown.
2. Bio-solids are the solids or semi-solids (non-liquid) portion of animal wastes. This includes manure solids that are separated by physical means, or mixtures of manure and bedding materials (straw, wood chips, rice hulls, etc.) that absorb the liquids.
3. Grass Buffer Area shall mean a grassed area that may receive contaminated storm water runoff and provides filtering of solids and some infiltration of applied storm water so that runoff from the buffer area is as sheet flow and is considered a non-point source.
4. Non-owned Dwelling shall mean a house or residence that is not owned or operated by the person responsible for stockpiling the manure or litter.
5. Public Use Area shall mean an open area commonly, and expected to be used by the public. This shall include but not limited to playgrounds, parks, outdoor services, swimming areas, etc.
6. Vegetative Filter means a grassy area that is designed by NRCS and operated so as to receive and infiltrate storm water runoff from a CAFO, from the storage of animal wastes from a CAFO, or from a field where erosion is likely to occur. Storm water should flow across the filter within hours or days of a storm event.

C. SPECIAL CONDITIONS (continued)

24. Movement of Manure from Production Site (continued)

SECTION C- REQUIREMENTS

1. Separation Distances shall be maintained between the stockpile and other features as follows:
   (a) 300 feet from any losing stream, well, open sinkhole, water supply (for human consumption) reservoir, non-owned dwelling or residence, public building or public use area.
   (b) 100 feet from intermittent and permanent flowing streams.
   (c) 50 feet from public roads and property lines.
2. Slope Limitations
   (a) Stockpiles cannot be placed on slopes steeper than 6%.
   (b) If stockpiled on slopes steeper than 2% a one foot high berm around the upper (up slope) side of the stockpile will be required.
3. Length of Time For Storage
   (a) Bio-solids, litter or dry manure cannot be stockpiled for over six months.
   (b) The same storage site cannot be used more than two years in a row. In the interim years when bio-solids, litter or manure is not stockpiled, the area shall be farmed to crops or seeded to grass.
   (c) Permanent sites will be allowed with prior approval through MDNR.
4. No temporary storage site can be larger than two acres. This will include the area of the pile, loading or unloading area, area inside berm, etc.

SECTION D- GENERAL REQUIRMENTS

1. Any temporary stockpiles need to be placed to prevent storm water from draining into or through the pile. If storm water does drain through the pile, even if the slope is less than 2%, a one foot berm will be required on the up slope side of the pile.
2. All piles shall be placed so as to minimize forming pockets, hollows or mini dams that would collect and hold water. One pile with an angle of repose so that it forms a crust and will tend to shed water off the pile will be the desirable design. If there are two or more stockpiles they should be placed far enough apart that they do not trap and hold water.
3. The manure, litter or bio-solids shall be dry enough to ensure that it stockpiles well. Wetter material will tend to seek it's own level, especially as the cell walls and structures break down.
4. When land applying the stockpiled material, the application rate shall not exceed the agricultural rates for the crop being grown. It shall be done in a manner that will not create a discharge of pollutants or contamination of waters of the state.
5. Nothing shall preclude the department from requiring a permit if the department determines that further precautions are necessary to prevent pollution to waters of the state.
6. In certain situations tarps may be required to cover the stockpile.
7. Permittee may construct permanent storage sites after approval by MDNR of construction materials, construction methods and site location.
   Storm water monitoring may be required on a case by case basis.

C. SPECIAL CONDITIONS (continued)

25. Requirements to purchase or receive manure from permittee

The following form shall be completed by the landowner, or operator of the land where the manure or processed litter from MoArk will be land applied and shall be incorporated into a written agreement between MoArk and the landowner or operator of the land where the manure or processed litter from MoArk will be land-applied. Compost that meets Class-A pathogen criteria would qualify for unrestricted public use either as an organic fertilizer, compost product, or potting soil in either bag or bulk form.
A copy of this form will be included in MoArk's annual report and maintained for a period of five years. The annual report shall include the amount and location of the manure received or purchased.

1. Manure will be hauled in vehicles that will not deposit manure on public roadways. Any spilled materials on roadways will be cleaned immediately.
2. Manure will not be applied on frozen, snow-covered or saturated fields.
3. Manure stockpiled outside must comply with Best Management Practices for stockpiling dry manure.
4. Manure will not be applied to fields with slopes over 20%.
5. Manure applied to fields without permanent vegetation and with slopes between 10% and 20% will be incorporated within forty-eight hours of application.
6. The application rate will be a maximum of two tons of dry litter per acre per year. In the event the maximum amount is exceeded, the Plant Available Nitrogen (PAN) approach shall be used.
7. Manure will be applied uniformly without depositing clods or clumps.
8. Manure will not be applied within:
   (a) 300 feet from any losing streams, open sinkholes, water supply wells, or water supply reservoirs;
   (b) 100 feet from classified gaining streams for Class P and Class C streams listed in 10 CSR 20-7.031; unclassified gaining steams with water and
   (c) 50 feet from unclassified gaining streams without water, public roads, or property boundaries.
9. Manure shall be applied as close as practical to when plans will utilize nutrients. Manure shall not be applied to fields with dormant vegetation.
10. An assessment shall be conducted on each field for potential phosphorus and nitrogen runoff. Land application rates may be limited by phosphorus based on the assessment.

I have read and understand the above requirements and agree to comply with each.

_____

Date: _____

26. Waste Characterization

The results of a waste characterization shall be submitted 180 days prior to the expiration date of this permit. The results will be used to determine if modifications for monitoring requirements or limitations are necessary prior to renewal of the permit. The results of a waste characterization shall also be submitted if changes in the operation will cause a significant increase of contaminants being land applied or contaminants not previously characterized being added to the operation. Similarly operated facilities may complete a waste characterization utilizing representative samples.